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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/627,775	07/28/2003	Stuart D. Hellring	1780A1	5341

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PPG Industries, Inc.
Law-Intellectual Property-39S
One PPG Place
Pittsburgh, PA 15272

EXAMINER

ACKUN, JACOB K

ART UNIT	PAPER NUMBER
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3723

DATE MAILED: 06/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/627,775

Applicant(s)

HELLRING ET AL.

Examiner

Jacob K. Ackun Jr.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) 21-23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 and 24-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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1. A review of the instant application indicates to the examiner now assigned to the instant application that certain issues as noted herein should be raised prior to any Appeal going forward. Accordingly a third office action is hereby drafted in order to address the noted issues.

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The following limitations added to the claims by the Amendment dated 06/20/05 are without support in the specification and thus constitute New Matter. The terminology in lines 2-4 of the specification is without support in the specification as filed. More specifically there is no teaching in the specification that the disclosed invention comprises dielectric, barrier and metal at least partially connected as now recited in claim 1. The most relevant reference the examiner can find to the structure of the substrate appears at page 1 lines 12-20 of the specification, that obviously appears to be a very general description of a prior art wafer and process for fabricating the same. This description includes a prior art structure referred to by the applicants as "overburden". However, the inventions to which the instant application appear to be directed are a slurry system and method for the removal of overburden from a wafer, or perhaps more generally the removal of metal from a wafer. The examiner is unaware of any portion of the

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specification that indicates that the specific wafer structure recited on lines 2-4 of claim 1 was intended to be a part of applicant's invention.

Moreover, even the noted portion of the specification (page 1, lines 12-20) provides no support for the "partially connected" terminology now part of claim 1. Dielectric, barrier and metal are notorious in the relevant art, and a general description of their use on a wafer such as appears on page 1 of the instant specification provides insufficient support for a claim requiring their partial connection. For example other materials may be used or layered with the dielectric, barrier or metal as is conventional, that might prevent their partial connection to one another.

The second ground of rejection for New Matter concerns the amendment to claim 1 specifying that the barrier layer is not completely removed. It is noted that this is a negative limitation inserted into a claim by amendment after a first office action. It is also noted that this is the sole distinction the applicants argue over the applied prior art. The objection to the specification with regard to this issue, made in the Final Rejection, and the applicants responses thereto have been reviewed. Not only does this examiner find that the objection was appropriate, but it also appears that this New Matter rejection is also warranted for the same reason.

The applicants refer to page 1 lines 12-20 of the specification for support for the noted limitation and in traversing the objection noted above. The applicants' argument appears to be that since this portion of the specification makes reference to the barrier and metal layers, and since the specification describes removal of the metal and does not mention removal of the barrier, the barrier is not removed in the disclosed invention, and therefore, the objection should not stand. This reasoning is unconvincing. Reference is again made to the fact that page 1 lines 12-20 appears to be a general teaching with regard to the prior art. In any event, it is agreed with

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applicants that this portion makes no reference to removal of the barrier layer. In fact there does not appear to be any teaching relative to removal or non –removal of any portion of the barrier layer anywhere in the disclosure. Again, the only reference to barrier material is a very general one with regard to its being known in the prior art together with the noted overburden and other layers in a wafer structure. The remainder of the Disclosure and claims as originally filed are directed at a slurry system and method to remove the prior art overburden. Naturally therefore, the Disclosure makes little if any other reference to removal of the barrier. Silence with regard to what happens to the barrier is clearly not sufficient support for the affirmative limitation in the claims that the barrier is not completely removed, applicants' arguments to the contrary notwithstanding. Applicants have clearly not complied with relevant law in this area that mandates a description with some specificity of what their invention is.

4. The disclosure is objected to because of the following informalities: There is no antecedent basis in the specification for limitation that the barrier layer is not completely removed.

Appropriate correction is required.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phrase the second slurry "can be chosen" in claim 1, is indefinite. All that is claimed can not be determined with the required specificity. For example, what else can it be chosen from? In another example, since every prior art slurry can also be chosen, how does this

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limit the claim. Additionally the noted terminology and the “or” on the same line is improper Markush terminology. Also the limitation that the second slurry has a lower concentration of abrasive than the first slurry is indefinite since it is specified in the claim that the second slurry can be selected from an abrasive free slurry. In that event the noted limitation with regard to a lower concentration of abrasive would not appear to have meaning. Finally claim 1 is indefinite because it is not clear how the negative limitation on the last line thereof is intended to limit a claim that is drawn to a slurry system comprising first and second slurries.

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-20 and 24-29 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Watts et al (5,985,748). This is essentially the same rejection made in the last office action and is made in the event claim 1 is read without the noted New Matter. It is hereby noted that the applicants’ have not argued this rejection as it is applied to claims 24-29. The applicants may wish to do so in a subsequent response or take other appropriate action so as to avoid a possible delay in prosecution resulting from a failure to address an outstanding rejection.

Alternatively and with regard to claim 1, even with the New Matter the limitation may be considered intended use or functional. Claim 1 is drawn to a slurry system and therefore is a product claim. A recitation with regard to what the applicant intends to do with the product is functional and is met by prior art that can perform the function, either as expressly taught in the

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prior art or inherently. It is clear to the examiner that the invention of Watts can at least inherently be used to perform the noted function, for example, by a user of the Watts device simply stopping the second polishing before the barrier was completely removed, at the option entirely of such a user.

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watts et al in view of Easter et al., Ferra et al, Laursen et al. or Cadien et al. (all cited in this office action).

This is an alternative rejection to the Section 102 rejection over Watts. Watts et al teaches most of the elements of the claims but may not teach that the barrier layer is not completely removed.

On the other hand each of the secondary references makes clear that it is conventional in the prior art to not completely remove the barrier layer or to leave behind a small quantity of the barrier layer depending on the particular circumstances (each secondary reference specifically makes reference to removing “at least a portion” of the barrier or liner film). Accordingly, it would have been obvious to one of ordinary skill in the relevant art to limit polishing with the second slurry in Watts so that at least some trace elements or more of barrier material were left, while still avoiding dishing or other known problems, depending on the degree of polishing judged to be acceptable. One having ordinary skill in the relevant art is presumed to have some skill, rather than a lack thereof, and therefore would not always be led to polish until there was

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absolutely no barrier layer whatsoever. Removal of a portion of barrier layer is not the invention of the applicants.

11. Claims 1-20 and 24-29 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Cadien et al. As already noted Cadien specifically teaches removing at least a portion of the barrier layer, and therefore contemplates not removing all of the barrier layer. Moreover since Cadien teaches dilution of the first slurry to prepare the second slurry, the Cadien second slurry is considered to have a lower concentration of abrasive than the Cadien first slurry. Should Cadien be deemed to be missing a particular feature of a dependent claim such as the claimed weight percent of abrasive, as recited in claim 8, it would have been obvious in vie of Cadien to provide the missing element for the purpose of better adapting the method to polish a specific article.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jacob K. Ackun Jr. whose telephone number is (571)272-4418.

The examiner can normally be reached on Monday through Friday 8.30AM-5.00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Hail can be reached on (571)272-4485. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Jacob K. Ackun Jr.
Primary Examiner
Art Unit 3723

J.A.